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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/990,318	11/23/2001	William A. Fuglevand	AV1-059	2777

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EXAMINER	
KALAFUT, STEPHEN J	4

ART UNIT	PAPER NUMBER
1745	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/990,318	FUGLEVAND ET AL.	
	Examiner	Art Unit	
	Stephen J. Kalafut	1745	

-- The MAILING DATE of this communication appears n the cover sheet with the corresp ndence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 November 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *32-38,51-61,65-67,75-79 and 263-358* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *282-289* is/are allowed.

6)☒ Claim(s) *See Continuation Sheet* is/are rejected.

7)☒ Claim(s) *See Continuation Sheet* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *3* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Continuation of Disposition of Claims: Claims rejected are 32-38,51,53-61,65-67,75,77-79,264,265,267,268,275,276,279-281,290-298,300,301,303,304,306-308,310,311,313-315,317-320,322-331,338,339,342-345,349 and 352-358.
Continuation of Disposition of Claims: Claims objected to are 52,76,263,266,269-274,277,278,299,302,305,309,312,316,321,332-337,340,341,347,348,350 and 351.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 290-296 and 353-357 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. These claims recite the term "hot-swappable", which does not appear in the specification or in the parent case, serial no. 09/322,666. The term would thus constitute new matter. The subject matter of these claims is thus not described in the specification.

Claims 59-61, 65-67, 265, 290-297, 317-320, 322-324 and 353-358 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Regarding claims 59-61, 65-67, 297, 317-320, 322-324 and 358, no connection is recited between the fuel cell and the controller. These claims would thus be incomplete. There is no antecedent for "the electrical condition" in claim 265. The claim also does not specify what device is having its condition indicated. Regarding claims 290-296 and 353-357, since the term "hot-swappable" is not mentioned in the original disclosure, it meaning cannot be determined. These terms would thus have indefinite scope.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claim 75 is rejected under 35 U.S.C. 102(b) as being anticipated by Hirota (US 5,141,824).

Hirota discloses two fuel cell stacks (1A, 1B), each with a main valve (6A, 6B) coupled to a fuel source (4) and configured to supply the stacks with fuel, and controlled by a controller (9). The conversion of chemical to electrical energy would be the inherent function of a fuel cell. Although terminals are not specifically mentioned, they are implicitly disclosed by the recitation of "electric output" (column 5, line 38).

Claims 51, 54, 56-58, 267, 268, 276, 279-281, 308, 311, 313-315, 330, 331, 339 and 342-344 are rejected under 35 U.S.C. 102(e) as being anticipated by Cubukcu *et al.* (US 6,074,771).

Cubukcu *et al.* disclose a fuel cell system including a housing (24); a temperature sensor (32) supported within, and thus at least indirectly by, the housing; a fan (30) supported by the housing; a plurality of terminals (DC POWER OUTPUT, figure 27); a stack of fuel cells (12) within the housing, and able to convert chemical energy into electricity (column 5, lines 15-28); a control system (36) which receives input from the temperature sensor and which controls the fan in response thereto (column 20 line 59 through column 21, line 22; dashed lines in figure 27); and an operator interface (38) which indicates the temperature sensed by the controller (column 20, line 65 through column 21, line 3). Using the temperature data, as well as the electrical output date, the controller also controls the fuel supply, which is an operational parameter (column 21, lines 1-10). See also figures 1A and 1B. The operator interface is on the outside of the housing, includes a human-perceptible LCD display (column 20, lines 65-67), and includes switches (dial 182 and on/off switch), which receive user inputs. Claims 308-311, 313-315, 330, 339 and 342-345 are method claims which recite that these components are provided or operated. In order for these components to be present, as in claims 267, 276 and 279-281, they would have to be provided. Operating the device of Cubukcu *et al.* would meet the operational steps recited by the method claims. Since the LCD display indicates voltage and current (column 21, lines 1-2), an electrical condition of the stack would be monitored.

Claims 298, 300, 301, 303, 304 and 306 are rejected under 35 U.S.C. 102(e) as being anticipated by DuBose (US 6,013,385).

DuBose discloses a fuel cell to which terminals (26) have been provided; which generates electricity (column 4, lines 65-66) from chemical energy; and from which non-fuel diluents are purged from the anode side via a bleed valve (96) which is operated periodically, and is thus controlled (column 8, lines 5-10). This would be a bleed valve timer. Although no particular housing is mentioned, a fuel cell would have to have a housing of some sort. Thus, a housing and at least one fuel cell therein have been provided. The fuel cell is of the PEM variety (column 7, lines 7-11). Each cell includes an anode side and a cathode side (column 5, lines 10-14).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 77 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirota in view of DuBose, both above.

This claim differs from Hirota by reciting fuel cells of the polymer electrolyte type. DuBose discloses polymer electrolyte fuel cells (column 7, lines 7-11). Because the disclosure of Hirota is not limited to any particular type of fuel cell, it would be obvious that his invention may be used with any type known in the art. Since DuBose exemplifies the polymer electrolyte fuel cell, it would be obvious to use this type in the fuel cell system of Hirota.

Claim 307, 345, 349 and 352 are rejected under 35 U.S.C. 103(a) as being unpatentable over DuBose in view of Cubukcu *et al.*, both above.

These claims differ from DuBose by reciting that an operator interface is provided and then coupled to a control system, which senses an electrical condition of the fuel cell, and that the interface is configured to indicate the condition. The control system and interface, and their functions, are disclosed by Cubukcu *et al.*, as stated above (column 20, line 65 through column 21, line 2). Because the fuel cell of DuBose needs to be controlled (column 3, lines 30-47), it would be obvious to use the control system and operator interface as disclosed by Cubukcu *et al.*

Claims 53, 275, 310 and 338 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cubukcu *et al.* in view of DuBose, both above.

These claims differ from Cubukcu *et al.* by reciting the use of polymer electrolyte fuel cells, rather than solid oxide fuel cells. DuBose discloses polymer electrolyte fuel cells (column 7, lines 7-11). Because of the lighter weight and lower operating temperature, which makes the cells easier to cool, it would be obvious to use the polymer electrolyte type of fuel cell disclosed by DuBose in the fuel cell system of Cubukcu *et al.*

Claim 346 is rejected under 35 U.S.C. 103(a) as being unpatentable over DuBose in view of Cubukcu *et al.* as applied to claim 345 above, and further in view of Hirota, also above.

This claim differs from the above combination by reciting that a main valve supplies fuel to at least one fuel cell, and is in fluid communication therewith, which is done using the control system. Hirota discloses a fuel cell system in which valves (6A, 6B) are used to supply fuel to

fuel cell stacks, which are directed by a controller (9). Each stack would thus have a main valve. Because the fuel cell of Cubukcu *et al.* uses a variable amount of fuel, and includes a control device, it would be obvious to supply the fuel using controllable valves which are directed by the controller, as shown by Hirota.

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

Claim 78 is rejected under 35 U.S.C. 101 as claiming the same invention as that of claim 257 of prior U.S. Patent No. 6,387,556. This is a double patenting rejection.

The patented claim is the same as the present claim written in independent form. Note that present claim 78 depends from claim 75.

Claim 79 is rejected under 35 U.S.C. 101 as claiming the same invention as that of claim 65 of prior U.S. Patent No. 6,387,556. This is a double patenting rejection.

The patented claim is the same as the present claim written in independent form. Note that present claim 79 depends from claim 75. The recitation in present claim 75 (and thus incorporated into claim 79) that the main valve is coupled to a fuel source and selectively supplies the fuel to the fuel cells would be inherent in the patented claim recitation that the main valve is coupled to a fuel source and auxiliary valves (the additional limitation of present claim 79) configured to selectively supply fuel to the fuel cells.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 32-38 and 264 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 31-35 of U.S. Patent No. 6,387,556 in view of DuBose. The present claims recite the purging of non-fuel diluents, while the patented claims recite the broader term "matter". DuBose teaches that air and inert gas should be purged from the anode in order to avoid the danger of explosion (column 8, lines 5-11), thus specifying the type of matter which should be removed. It would be obvious to modify the fuel cell system

and bleed valve of the patented claims to remove air and inert gas to avoid the danger of explosion, as taught by Dubose.

Claim 265 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 31-38 of U.S. Patent No. 6,387,556 in view of DuBose as stated immediately above, and in view of Cubukcu *et al.* This claim differs from the patented claims additionally by reciting an operator interface which displays an electrical condition. Cubukcu *et al.* discloses a fuel cell with such a display (column 20, line 65 through column 21, line 3).

Claims 325-329 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 194-201 of U.S. Patent No. 6,387,556. Although the conflicting claims are not identical, they are not patentably distinct from each other because the "plurality of terminals" of the present claims would encompass the "first" and "second" terminals of the patented claims, and because operating the fuel cells provided in patented claim 194 would produce the conversion of chemical energy into electrical as recited by present claim 325.

Claims 282-289 allowed. The prior art applied above, or cited either below or by applicants, does not disclose a fuel cell system including a controller which both monitors an electrical output condition of at least one fuel cell therein, and controls a bleed valve.

Claims 52, 76, 263, 266, 269-274, 277, 278, 299, 302, 305, 309, 312, 316, 321, 332-337, 340, 341, 347, 348, 350 and 351 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art does not disclose a fuel cell system, which includes in addition to the features recited in the respective independent claims: a plurality of distributed controllers, fuel cells which can be selectively deactivated, fuel cells provided in a plurality of cartridges, fuel cell control based on electrical efficiency, a temperature sensor outside the fuel cell housing, or a fuel concentration sensor inside the housing. Claim 321 recites a connection between the power supply, controller and fuel cell, and thus lacks the informality of its parent claim 317.

Claims 59-61, 65-67, 297, 317-320, 322-324 and 358 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action. The prior art does not disclose, nor does applicant's earlier patent claim, the arrangements in these claims which involve the control system being responsive to the power supply, which is other than the fuel cell.

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim 354 is objected to because of the following informalities: This claim ends with two periods. Appropriate correction is required.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Grot *et al.* (US 6,001, 499) and Tajima *et al.* (US 5,334,463) disclose fuel cells with control systems, and were cited in the parent case (now Patent No. 6,387,556). Applicant's supplemental IDS is noted, but no previous IDS has been received.

Applicant's arguments with respect to claims 32, 51, 59, and those depending thereon, have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen J. Kalafut whose telephone number is 703-308-0433. The examiner can normally be reached on Mon-Fri 8:00 am-4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on 703-308-2383. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

sjk

STEPHEN KALAFUT
PRIMARY EXAMINER
GROUP 1700